ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PMAGA01130

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Agave yavapaiensis*
COMMON NAME: Page Springs Agave
SYNONYMS:

FAMILY: Agavaceae

AUTHOR, PLACE OF PUBLICATION: Hodgson and Salywon, 2013. Brittonia 65(1): 5-15. March 1, 2013.

TYPE LOCALITY: Yavapai County, Arizona. Near Page Springs, elevation 3904 feet.

TYPE SPECIMEN: Holotype: DES S/N, W.C. Hodgson and A. M. Salywon (25496) 23 June 2010.

TAXONOMIC UNIQUENESS: The species *yavapaiensis* is one of 36 in the *Agave* family and one of five accepted Arizona *Agave* domesticate species. It is placed in Gentry's informal group Ditepalae (Gentry, 1982) because of its leathery, erect flowers, dimorphic tepals with the outer whorl larger than the inner, and the outer tepal tips cucullate with a dark, corneous and pubescent cap. Its vegetative and reproductive characteristics warrant it as morphologically distinct from other species. The *yavapaiensis* species shows affinities to *A. delamateri* and *A. chrysantha* Peebles, and *A. shrevei* Gentry. It differs from *A. chrysantha* by its cloning nature, little variability in morphology of vegetative and sexually reproductive structures, leaf size and shape, marginal teeth, number and orientation, flower color, and minimal seed productions, favoring reproduction by rhizomatous offsets.

DESCRIPTION: Plants ca. 60—70 cm high and broad, rosettes open, freely offsetting via rhizomes, forming clones of few to several plants. Leaves numerous, narrowly elliptic to linear-oblanceolate, abruptly acuminate, 33.5—50 x 4.2—8 cm, broadest at or just above or below middle, firm, abrupt-acuminate, erect-spreading, easily cut with knife, blue-green, usually without maroon flush distally, deeply guttered; marginal teeth porrect, upturned or recurved, close-set, firmly attached, gray, red-brown to dark mahogany; interstitial teeth 3—7 along distal 2/3 of leaf; terminal spine 1.6—3.1 cm long, gray to dark brown-gray. Inflorescence narrowly paniculate; stalk to 4—6 m tall, dark green-maroon, glaucous, with 16—18 lateral, slightly ascending branches in upper 2/5 of stalk, these 13—18 cm long at widest point. Flowers 42—57 mm long, with a sweet-musky fragrance at anthesis; tepals persistently erect, clasping filaments, becoming leathery with age, in two series, unequal, those in outer series 11—12 mm long, cream to cream-yellow, with brown papillose-

pubescent cucullate tips, those of inner series 9—10.5 mm long, cream to cream-yellow, strongly keeled, with white ciliate hairs within apices; floral tube 13—16 x 11—15.5 mm, thickish, bulging at base of tepal lobes, dark chartreuse-green; filaments cream-yellow, 33—43 mm long, subequally inserted, 5—10.5 mm above base of tube; anthers 10—18 mm long; ovary 20—26 x 5—8.5 mm, green to dark chartreuse green, neck chartreuse-green, 2—4 mm long; style light cream, 28-39 mm long. Capsules only produced in upper ¼ of stalk, linear to linear-oblong, apiculate, 34—42 x 11—17 mm, the valves 8—12 mm wide, stipitate, the stipe 4—6 ,, long; viable seed few, dull black, 5 x 4 mm. (Hodgson and Salywon 2013).

AIDS TO IDENTIFICATION: Differs from *A. verdensis* by its narrowly elliptic to linear-oblanceolate, abruptly acuminate, blue-green leaves that are slightly flushed with maroon, porrect, upturned, recurved or deflexed marginal teeth, dark brown, but not conspicuous calloused tepal lobe apices, green to dark green ovary and conspicuously stipitate, narrower, linear fruit with narrow valves. (Hodgson and Salywon 2013).

ILLUSTRATIONS: Line drawings in Hodgson and Salywon, 2013.

TOTAL RANGE: The species only has ten known populations in Yavapai County, Arizona, each occur near agricultural archaeological sites and habitation associated with pre-Columbian cultures from ca. A.D. 1100—1400, at elevations between 3000 – 4000 feet (914 – 1219 m).

RANGE WITHIN ARIZONA: Yavapai County, Page Springs locality.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Succulent perennial.

PHENOLOGY: Flowers late June through early August and fruits in late summer to fall. All of the plants flowering in the same year are at a similar stage of flowering, also described as synchronous.

BIOLOGY: Relies on vegetative reproduction through the formation of “pups” by the rhizomes, by which few capsules with relatively few, small seeds develop only near the upper part of the inflorescence. Their perceived lack of significant variation in rosette, leaf, inflorescence and flower characters also suggest human manipulation. The species *A. yavapaiensis* possesses traits favorable for harvesting and use for food and fiber. Additionally, their caespitose cloning habit, easily cut leaves and deflexed teeth, synchronous flowering, sweet-tasting heads are all characteristics that may have been selected for pre-Columbian farmers. The baked heads are exceptionally large and dense, weighing 30—40 pounds.

HABITAT: Semi-arid desert grassland to pinyon-juniper woodland, usually on igneous derived soils and less frequently on limestone soils. Associated with archeological sites and likely established as a domesticate plant.

ELEVATION: 3000 to 4000 ft (914—1219 m)

EXPOSURE: Grow on dry, exposed ridges overlooking perennial water usually in agriculturally favorable basalt soils with or near archaeological features.

SUBSTRATE: Grows on rocky clayey-loamy igneous derived soils, less frequently on limestone soils.

PLANT COMMUNITY: Sometimes found with *Agave verdensis* and other domesticates such as *A. delamateri and A. phillipsiana.* Associated species *Vachellia constricta* Bentham, *Canotia holacantha* Torr., *Cylindropuntia acanthocarpa* (Engelm. & J.M. Bigelow), *Hilaria jamesii* (Torr.) Benth., *Ephedra torreyana* S. Wats. var. *torreyana*, *Fouquieria splendens* Engelm., *Gutierrezia sarothrae* (Pursh) Britton & Rusby, *Juniperus osteosperma* (Torr.) Little, *Krameria erecta* Willd. Ex J.A. Schultes, *Larrea tridentate* (DC.) Coville, *Opuntia engelmannii* Salm Dyck ex Engelm., *O. phaeacantha* Engelm., *Prosopis velutina* Woot., *Quercus turbinella* Greene, *Rhus trilobata* Nutt., *Yucca baccata* Torr.

POPULATION HISTORY AND TRENDS: First collected in 2003, considered a rare taxon. Trend unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.
STATE STATUS: None.
OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 2013)

MANAGEMENT FACTORS: None specified.

PROTECTIVE MEASURES TAKEN: None known, other than some plants offered protection by their locations within a National Monument.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: U.S. National Park Service, Tuzigoot National Monument, and U.S. Forest Service Coconino National Forest.

SOURCES OF FURTHER INFORMATION

REFERENCES:

Gentry, H.S. 1982. Agaves of Continental North America. University of Arizona Press, Tucson.

Hodgson, W.C. and A.M. Salywon. 2013. Two new *Agave* species (Agavaceae) from central Arizona and their putative pre-Columbian domesticated origins. Brittonia 65(1), pp. 5-15, March 1, 2013. The New York Botanical Garden Press, Bronx, NY.

USDA, Forest Service Region 3. 2013. Regional Forester's List of Sensitive Animals.

MAJOR KNOWLEDGEABLE INDIVIDUALS: Wendy C. Hodgson and Andrew M. Salywon, Desert Botanical Garden, Phoenix.

ADDITIONAL INFORMATION: From the preponderance of archeological and botanical evidence, it is speculated that these and other agaves were an exceedingly important domesticate during pre-Columbian times in parts of Arizona and adjacent Mexico (Hodgson and Salywon 2013).

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